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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/033,427	12/27/2001	Olivier Theytaz	19414-06075	9279

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EXAMINER	
AWAD, AMR A	
ART UNIT	**PAPER NUMBER**
2675	6

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Please find below and/or attached an Office communication concerning this application or proceeding.

TS

Office Action Summary	Application No.	Applicant(s)	
	10/033,427	THEYTAZ ET AL.	
	Examiner	Art Unit	
	Amr Awad	2675	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-57* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-57* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *4,5*.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Information Disclosure Statement

1. The references cited in the Information Disclosure Statements filed July 10, 2002 and March 17, 2003 have been considered by the Examiner; see attached PTO-1449.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-2, 4-7,9-15, 18-22, 25-37, 40-44, 46-47, 49-51 and 54-57 are rejected under 35 U.S.C. 102(e) as being anticipated by Adan et al. (US Patent NO. 6,531,692; hereinafter referred to as Adan).

As to claim 1, Adan (figure 6) teaches a system for illuminating a target surface (optical mouse 42) that includes a light source (LED 104), positioned at angle relative to a circuit board (158), the light source emitting light through an opening (206), and a lens (155) having an entrance surface and an exit surface, wherein the entrance surface

positioned to gather the light from the light source and the exit surface directing the light onto the target surface (col. 12, lines 16-34).

As to claims 2 and 4, the shape of the lens (155) fairly reads on the limitation refraction disclosed in the claims.

As to claim 5, Adan teaches that the light source has an angle of about 20 degrees of the flat surface (same orientation of the circuit board), which is within the range of 10 degrees and 45 degrees (col. 13, lines 5-7).

As to claim 6, as can be seen in figure 6, the light from the LED (104) flows through the opening (206) of the circuit board (158).

As to claim 7, as can be seen in figure 6 and by considering the optical coupler (107) being part of the light source; the light source protrudes through the circuit board (col. 12, lines 23-29).

As to claim 9, as can be seen in figure 6, the entrance surface of the lens (155) has a curvatured surface for gathering the light emitted from the light source (104).

As to claim 10, as can be seen in figures 15-16, Adan shows the lens 155 having aspherical shape.

As to claim 11, as can be seen in figure 6, Adan shows that the lens (155) has curvatured surface for spreading light onto the target surface (110) (col. 12, lines 24-31).

As to claim 12, the shape of the lens (155) in figures 6 and 15-16 is a toroidal shape.

As to claims 13-14, Adan teaches using the device in an optical mouse or trackball (col. 4, lines 14-22).

As to claim 15, as can be seen in figure 6; Adan teaches that the light source is light emitting diode (104).

As independent claim 18, the claim is a method of manufacturing an efficient illumination system disclosed in independent claim 1. Therefore, it is inherent that the system described in claim 1 would have a method of manufacturing similar to the method described in claim 1. Therefore, the rejection of claim 1 above is substantially applied to the rejection of claim 18.

As to claim 19, as can be seen in figure 6, the light from the LED (104) flows through the opening (206) of the circuit board (158).

As to claim 20, as can be seen in figure 6, Adan teaches that the light source is light emitting diode (104).

As to claim 21, Adan teaches that the light source has an angle of about 20 degrees of the flat surface (same orientation of the circuit board), which is within the range of 10 degrees and 45 degrees (col. 13, lines 5-7).

As to claim 22, Adan teaches using the device in an optical mouse or trackball (col. 4, lines 14-22).

As to independent claim 25, the claim is method corresponding to the system of claim 1, and would be analyzed as previously discussed with respect to claim 1.

As to claim 26, Adan teaches that the light source has an angle of about 20 degrees of the flat surface (same orientation of the circuit board), which is within the range of 10 degrees and 45 degrees (col. 13, lines 5-7).

As to independent claim 27, Adan (figure 6) teaches a system for illuminating a surface (optical mouse 42) that includes a light means (LED 104), positioned tilted relative to a surface (image detector 110), and a gathering means (lens 155) for gathering the light (col. 12, lines 16-34), and a directing means (opening 206) for directing the light directly onto the surface (col. 12, lines 29-31).

As to claim 28, as can be seen in figure 6; Adan teaches that the light source is light emitting diode (104).

As to claim 29, Adan teaches that the light source has an angle of about 20 degrees of the flat surface (same orientation of the circuit board), which is within the range of 10 degrees and 45 degrees (col. 13, lines 5-7).

As to claim 30, as can be seen above with respect to claim 27, Adan teaches that the gathering means is a lens (155) positioned to gather the light from the light emitting means (104).

As to claim 31, Adan teaches using the device in an optical mouse or trackball (col. 4, lines 14-22).

As to independent claim 32, Adan (figure 6) teaches a refractive lens (155) that includes a first curvatured surface to gather light and a second curvatured surface, coupled to the first surface shaped for directing the light in an optical illumination system directly to target surface (110) using refraction (col. 12, lines 16-34).

As to claim 33, as can be seen in figures 15-16, Adan shows the lens 155 having aspherical shape.

As to claim 34, the shape of the lens (155) in figures 6 and 15-16 is a toroidal shape.

As to claim 35, Adan (figure 6) teaches a light source (104) for illuminating the first and second surface of the lens (155).

As to claims 36-37, Adan teaches using the device in an optical mouse or trackball (col. 4, lines 14-22).

As to independent claim 40, Adan (figures 5-6) teaches an illumination system (optical mouse 42) that includes an internal reflection (optical coupler 107) has an entrance surface (inlet end 142) positioned to gather light, a truncated light pipe (107) coupled to the entrance surface for directing the light, and a curvatured (outlet end 144) coupled to the light pipe for efficiently directing the light onto a surface (106) (col. 11, lines 31-47).

As to claim 41, as can be seen in figure 5; the light pipe (10&) is cone-shaped.

As to claim 42, as can be seen in figure 5, Adan shows that the light pipe (107) has a larger entrance (1420 cross-section than exit cross-section (144).

As to claim 43, the shape in figure 5 of the optical pipe (107) can be considered as a cylindrical shape.

As to claims 44 and 46, in figure 5, Adan shows the light pipe (107) has a reflective surface (inside surface of the light pipe) for a total internal reflection (col. 11, lines 11-18).

As to claim 47, using the broadest reasonable interpretation of the claim; we can consider that each side of the pipe is first and second reflective surface.

As to claim 49, as can be seen in figure 5; Adan shows a total internal reflection (col. 11, lines 11-18).

As to claims 50-51, Adan shows a light source (LED 104).

As to independent claim 54, the claim is a broad version of independent claim 40 and would be analyzed as previously discussed with respect to claim 40 above.

As to claim 55, as can be seen in figure 5; the light pipe (10&) is cone-shaped.

As to claim 56, the shape of the lens (155) in figures 6 and 15-16 is a toroidal shape.

As to independent claim 57, Adan (figure 6) teaches a system for illuminating a target surface (optical mouse 42) that includes a light source (LED 104), positioned at angle relative to a circuit board (158), the light source emitting light through an opening (206), and a lens (155) having an entrance surface and an exit surface, wherein the entrance surface positioned to gather the light from the light source and the exit surface directing the light onto the target surface (col. 12, lines 16-34). Adan also shows in figures 15-18, that the shape of the lens (155) has an aspherical in the entrance surface, and the exit surface (the middle part of the lens 155) is fairly cylindrical.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 45 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adan.

As can be seen above, Adan teaches all the limitations of claims 45 and 48 except the citation of having the first and the second reflective surfaces have a metal coating.

However, as can be seen in figure 5, Adan shows the light from the LED 104 reflected from the surface (107), which indicates a surface with a high reflectivity (i.e., metal surface).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to made the reflective surface of metal so as to provide high reflecting ratio with high reliability.

7. Claims 3 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adan in view of Smith (US patent NO. 6,476,970).

As to claim 3, as can be seen above, Adan teaches all the limitations of claim 3 except the citation of using a Fresnel lens.

However, Smith teaches illumination optics for an optical mouse that includes a Fresnel lens (figure 6). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include the teaching of Smith using

Fresnel lens to be incorporated to Adan's device so as to be able to provide a compact uniform illumination beam that does not have blind spot.

As to claim 8, the shapes of the lens provided by Smith in figures 8-9 are fairly read on the limitation wedge shape of claim 8. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include the teaching of Smith using wedge lens to be incorporated to Adan's device so as to be able to provide a compact uniform illumination beam that does not have blind spot.

8. Claims 16-17,23-24,38-39 and 52-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adan in view of Bidiville (US patent NO. 6,084,574).

As can be seen above, Adan teaches all the limitations of claims 16-17, 23-24, 38-39 and 52-53 except the citation of having the lens made from glass or optical plastic.

However, Bidiville (figure 12B) teaches an optical mouse that includes lens (1220), which is made from glass or optical plastic (col. 16, lines 34-43).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include the teaching of Bidiville having lens made from glass or optical plastic to be incorporated to Adan's device because such materials are known to be used in the manufacturing of lenses and known for its reliability and affordability.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Williams et al. (US patent NO. 4,751,505) teach an optical mouse with a lens and circuit board.

Venkat et al. (US patent NO. 6,421,045) teach a snap-on lens carrier assembly for integrated chip optical sensor.

Son et al. (US Publication NO. 2002/0080117A1) teaches an optical mouse with a light source tilted from the surface.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amr Awad whose telephone number is (703)308-8485. The examiner can normally be reached on Monday-Friday, between 9:00AM to 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Saras can be reached on (703)305-9720. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-4750.

Amr Awad
12-5-2003

A.A.